

501,498
Rec'd PCT/PTO 12 JUL 2004

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



10/501498



(43) International Publication Date
17 July 2003 (17.07.2003)

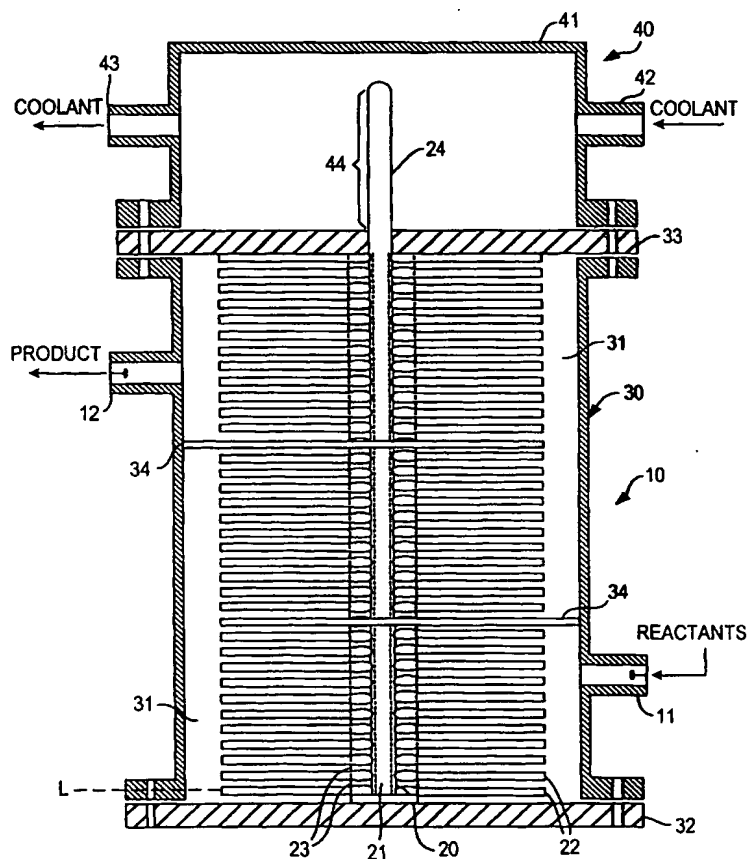
PCT

(10) International Publication Number
WO 03/057361 A1

- (51) International Patent Classification⁷: B01J 19/00, F28D 15/02, B01J 19/24
- (71) Applicant and (72) Inventor (for JP, US only): LE, Vinh, N. [CA/SA]; P.O. Box 5101, Riyadh 11422 (SA).
- (21) International Application Number: PCT/CA03/00017
- (22) International Filing Date: 10 January 2003 (10.01.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: 10/044,713 12 January 2002 (12.01.2002) US
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (71) Applicant (for all designated States except JP, US): SAUDI BASIC INDUSTRIES CORPORATION [SA/SA]; P.O. Box 5101, Riyadh 11422 (SA).
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),

[Continued on next page]

(54) Title: CHEMICAL REACTOR WITH HEAT PIPE COOLING



(57) Abstract: A polymerization reactor (10) for exothermic liquid phase reactions comprises a reaction zone (31) which is divided into a plurality of channels by thermally conductive heat transfer fins (22) which are conductively mounted on one or more heat pipes (20) for the removal of heat of reaction from reactants and reaction products flowing between the heat transfer fins. The reactor (10) of the invention is capable of maintaining essentially isothermal conditions without the use of complicated and maintenance intensive agitators. The reactor (10) is particularly useful when viscosity of the reactants and/or reaction products is high, when the reaction conducted has a fast reaction rate and when consistent polymer properties are desired.

WO 03/057361 A1